

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference TS 1408 PCT	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/EP2005/050999	International filing date (day/month/year) 07.03.2005	Priority date (day/month/year) 08.03.2004	
International Patent Classification (IPC) or national classification and IPC INV. B01J8/22			
Applicant SHELL INTERNATIONALE RESEARCH MAATS... et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 1 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  29.12.2005		Date of completion of this report  05.04.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer  Thomasson, P  Telephone No. +49 89 2399-8339	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/050999

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-20 as originally filed

**Claims, Numbers**

7-10 as originally filed

1-6 received on 09.01.2006 with letter of 06.01.2006

**Drawings, Sheets**

1/3-3/3 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/050999

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-8, 10
	No: Claims	9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following documents:

- D1: WO 00/66257 A (COPPENS MARK OLIVIER) 9 November 2000 (2000-11-09)
- D2: GB 787 123 A (RHEINPREUSSEN AG) 4 December 1957 (1957-12-04)
- D3: WO 96/26003 A (HOECHST AG) 29 August 1996 (1996-08-29)
- D4: WO 02/22249 A (PROCEDYNE CORP) 21 March 2002 (2002-03-21)
- D5: WO 98/37168 A (SASOL CHEMICALS EUROP LTD ; LABUSCHAGNE JOHAN (ZA); STEYNBERG ANDRE PE) 27 August 1998 (1998-08-27)

2. Claims 1-8 do not meet the requirement of Article 33(3) PCT:

2.1 Closest prior art.

D1-D5 disclose a sparger, a reactor comprising the sparger and the method using the sparger, the sparger comprising a gas outlet and a gas distribution mean which is disposed **above** the sparger outlet, D1 and D2 disclosing the use of such a sparger for **Fischer-Tropsch** Synthesis (see D1-D5: International Search Report). D1, D2 and D4, D5 do not disclose any details with regard to the distance between the sparger gas outlets and the distribution system as well as the distance between the gas outlets and the reactor floor.

D3, considered as being the closest prior art, discloses a distance of **30 cm** between the sparger gas outlets and the distribution system and a distance of **40 cm** between the gas outlet and the reactor floor (fluidization grid; see D3: page 6, line 7 and lines 17-20).

2.2 Novelty.

The subject-matter of claim 1 differs from D3 in that the distance between the gas outlet and the reactor floor is **less than 20 cm**.

2.3 Inventive step.

The technical problem to be solved against D3 is to improve the **distribution** of a feed gas through the suspension zone of a reactor (see the description of the application on page 4, lines 3-6). The choice of the distance between the gas outlet and the reactor floor is considered as coming within the practice of the skilled person, according to the circumstances. For example if the **fluidized gas** has to be delivered by the sparger, this distance should be **as low as possible** in order to avoid **dead zones** at the bottom of the reactor. No unexpected effects or advantages linked with a distance of less than 20 cm are indicated in the description of the application. Therefore the inventive step can not be recognized.

2.4 The technical features of claims 2-8 are either known from D1-D5 or are considered to be merely one of several possibilities which the skilled person would select, in accordance with the circumstances, without the exercise of inventive skill. Consequently these claims do not meet the requirement of Article 33(2)-(3) PCT.

3. Claims 9 and 10 do not meet the requirement of Article 33(2) PCT:

D1-D5 discloses a method for carrying out a reaction with a sparger and a reactor comprising the sparger, the sparger comprising a gas outlet and a gas distribution mean which is disposed **above** the sparger outlet, D1 and D2 disclosing the use of such a sparger for **Fischer-Tropsch** Synthesis (see D1-D5: International Search Report). Therefore the subject-matter of claims 9 and 10 is not novel.